Data Understanding, Data Analysis, and Data Science

Volume 3 – Spotlight on Machine Learning

Deepen your understanding of data-driven modelling with **Spotlight on Machine Learning**, the third volume in the **Data Understanding, Data Analysis, and Data Science** series. This volume introduces the principles and practices of machine learning, focusing on both foundational theory and practical techniques.

Topics include supervised learning, regression, classification, clustering, and the critical areas of feature selection and dimension reduction. The content emphasizes interpretability, model selection, and the trade-offs involved in algorithmic decision-making.

Rather than presenting machine learning as a fixed set of tools, this volume encourages readers to engage critically with the assumptions and choices that underlie different methods. Designed for use alongside lectures or as an independent guide, **Spotlight on Machine Learning** equips readers to navigate an evolving landscape with curiosity, care, and confidence.

About the Author

Patrick Boily is an Assistant Professor in the Department of Mathematics and Statistics at the University of Ottawa. He earned his Ph.D. in Mathematics in 2006 and is the author of several textbooks on mathematics, statistics, and data science, available at idlewyldanalytics.com .

Since 1999, he has taught more than 75 courses at the University of Ottawa, the Université du Québec en Outaouais, and Carleton University. From 2008 to 2012, he served as a federal public servant, contributing to several projects including the award-winning Canadian Vehicle Use Study. From 2012 to 2019, he launched and managed Carleton University's Centre for Quantitative Analysis and Decision Support (CQADS), and he is a founding member of the Data Action Lab, which offers workshops, short courses, and consulting services in data analysis.

Patrick's academic work focuses on the application of mathematics and statistics to evidence-based decision support. He has provided consulting services to a wide range of public and non-profit organizations, including United Way, the Public Health Agency of Canada, the Canadian Air Transport Security Authority, and the Department of National Defence. His areas of expertise include operations research, data science and predictive analytics, stochastic modelling, and simulation.

Patrick is an avid hockey player, cross-country skier, cyclist, mountain biker, and swimmer; he enjoys crosswords, playing the guitar, and watching British murder mysteries. He lives with his family in Wakefield, Quebec.

IDLEWYLD

QUADRANGLE